

REVIEWS

Pharmacology: An Introduction to Drugs. By MICHAEL C. GERALD. Prentice-Hall, Englewood Cliffs, NJ 07632, 1974. 524 pp. 15.5 × 23.5 cm. Price \$11.95.

The writing of a general pharmacology textbook intended primarily (though not exclusively) for individuals possessing little or no scientific background is an ambitious undertaking. Author Michael Gerald has taken on this onerous task and, in the opinion of this reviewer, has succeeded splendidly.

"Pharmacology: An Introduction to Drugs" is unlike other recently published introductory pharmacology texts (*e.g.*, Levine, "Pharmacology: Drug Actions and Reactions" and Ray, "Drugs, Society and Human Behavior") in that it does not confine itself to the basic principles governing chemical-biologic interactions or to a discussion of only those drugs possessing abuse potential; rather, it encompasses the entire scope of the science of pharmacology. It is a textbook well suited to the needs of both nonprofessional students and lay persons who seek an understanding of what drugs are, how they act, and what they can and cannot do.

Dr. Gerald has a delightfully disarming style of writing and has organized his book in a logical, easy-to-follow sequence. The book contains very few ambiguities and is relatively free of minutiae and detailed information which might prove confusing to the novice. Where knowledge is lacking or when scientific opinion is conflicting on some drug-related subject, this is so stated. Many erroneous beliefs and popular misconceptions about drugs are dispelled outright.

The book is divided into seven sections covering the following topics (the number of pages devoted to each topic is given in parentheses): I, General Concepts of Pharmacology (79); II, Drugs Affecting the Peripheral Nervous System (91); III, Drugs Affecting the Central Nervous System (185); IV, Drugs Affecting the Cardiovascular System (32); V, Drugs Affecting the Endocrine System (35); VI, Chemotherapeutic Agents (42); and VII, Toxicology (11). Each chapter is concluded with a summary and a list of supplementary readings. The first chapters of Sections II-V are devoted to an overview of basic anatomy and physiology. The overviews covering the autonomic and central nervous systems are particularly good and include a number of instructive diagrams.

What I enjoyed most about the book was Dr. Gerald's liberal use of quotations, epigrams, and historical anecdotes, each of which he has been careful to document. Since much of the material will be new even to the antediluvian pharmacologist, it should prove invaluable to instructors in other fields who might make use of it in speeches, lectures, and other pedagogic endeavors. Here is a sampling.

Recounting his second voyage around the world, Captain James Cook describes his experience after eating the liver and roe of the puffer fish (now known to contain tetrodotoxin):

"About three to four o'clock in the morning, we were seized with most extraordinary weakness in all our limbs attended with numbness of sensation like to that caused by exposing one's hands and feet to a fire after having been pinched much by frost. I had almost lost the sense of feeling nor could I distinguish between light and heavy objects, a quart potfull of water and a feather was the same in my hand. We each took a vomit and after that a sweat which gave great relief. In the morning, one of the pigs which had eaten the entrails was found dead."

The following quote attributed to F. Scott Fitzgerald precedes the chapter on sedative-hypnotic agents:

"It appears that every man's insomnia is as different from his neighbor's as are their daytime hopes and aspirations."

This review would be incomplete without mention of the few misgivings I had about the book. For one thing, it seemed to me as though the author had reneged on a prefatory promise to "sprinkle but a modest number of chemical structures among the pages of his book" when he incorporated nine complex chemical structures of narcotic analgesics and antagonists in Figure 13-1 and 14 chemical structures

of aminergic psychotomimetic agents in Figure 17-1. Second, the overview of the cardiovascular system suffered somewhat from overdistillation. It probably will leave the casual reader with little comprehension of cardiac function or what "blood pressure" is really all about. Third, considering the fact that many would-be readers will have had no formal courses in biology or physiology, I think it unfortunate that Dr. Gerald did not spend time early in his book developing the concept of homeostasis, *i.e.*, the maintenance of a stable internal environment. This fundamental concept supplies the basis for understanding the common denominator of the functions carried out by all organ systems. I believe it would have paid off handsomely had the author driven this point home right from the outset.

The above criticisms are in no way intended to discourage adoption of the book for appropriate undergraduate courses. It is a well-written, informative, and entertaining text. Dr. Gerald is to be complimented on a truly fine contribution.

*Reviewed by Louis Diamond
College of Pharmacy
University of Kentucky
Lexington, KY 40506*

Advances in Pharmaceutical Sciences. Volume 4. Edited by H. S. BEAN, A. H. BECKETT, and J. E. CARLESS. Academic, 111 5th Avenue, New York, NY 10003, 1974. 444 pp. 15 × 22.5 cm. Price \$35.00.

This volume is composed of four unrelated chapters, each supported by numerous references. The subjects considered are different from those in previous volumes except for the chapter on rheology. In Volume 1, this chapter included discussions of Newtonian flow, plastic flow, pseudoplastic flow, dilatancy, and thixotropy; a description of various instruments designed for measuring rheologic properties; and a consideration of the application of rheology to various pharmaceutical systems.

In Volume 4, rheology is considered in its application to pharmaceutical and cosmetic semisolids using two drug delivery systems: (a) soft paraffins and their formulations, and (b) ternary systems and oil-in-water emulsions containing mixed emulsifiers of surfactant-long-chain alcohol types. The author describes continuous shear rheometry of semisolids. Most of the chapter is devoted to the nature of viscoelastic behavior and viscoelastic analysis of semisolids.

The author states that a considerable amount of mathematics is necessary for a complete understanding of the viscoelastic theory. However, in this chapter he uses only elementary mathematics in his consideration of the simpler shear case in order to make the information usable by someone not so well versed in mathematics. The researcher will need to be very knowledgeable in mathematics to conduct research at the academic level, whereas the formulation pharmacist who has a deadline to meet on the production line can still use the viscoelastic approach if he or she uses strain techniques and control tools. A protocol is presented for the examination of raw materials and products using the viscoelastic theory. The author used over 100 references, including about 30 of his own publications.

The second chapter, "Determination of Thermodynamics of Functional Groups in Solutions of Drug Molecules," is supported by about 540 references in a variety of publications. The authors also describe some of their own research on this subject. First, the authors review some relevant areas of equilibrium thermodynamics and the meanings of some terms. Then they discuss the group contribution concept by activity coefficients, solubility, heat capacity, molar volume, and partition coefficients. They present experimental determinations of thermodynamic quantities and group contribution values. The functional groups considered are methylene, methyl, branched alkyl chains, double bonds, ring compounds, halogens, and various polar groupings. Finally, they discuss the application of the group contribution concept in pharmaceutical sciences.

The chapter on "Radiopharmaceuticals" is introduced with an outline of radioactivity and definitions, choice of radionuclide, principles of radiation hygiene, historical aspects of radioactive materials, and the radioactive products official in the *British Pharmacopoeia*. The diagnostic applications of radiopharmaceuticals are presented, and descriptions of radionuclide generators are given. Hospital preparation of radiopharmaceuticals, including the use of ampuls and multidose vials, the use of bactericides, and quality control, is described. A section on toxic ingredients and adverse reactions includes control by drug regulatory authorities. A final section discusses radioisotopes in clinical chemistry, professional collaboration, and future developments.

The chapter on "Rectal Administration of Drugs" is introduced with a discussion of lipid materials and water-soluble compositions as bases for suppositories. Sections on formulation development and quality control include drug release, problems with suspended solids, viscosity adjustments, melting ranges, solidification ranges, and physical breakdown in water. The manufacture and packaging of suppositories are included. Finally, a section on the rectal absorption of drugs (several different examples are given) in animals and humans is presented.

An index makes it possible to find most topics covered in the book.

The authors of this volume have cited over 800 references, including many of their own research papers, in their chapters. This broad coverage not only makes the volume valuable in itself but also is an advantage to the reader who may want to follow up on specific subjects.

*Reviewed by Elmer M. Plein
University of Washington
School of Pharmacy
Seattle, Washington 98195*

Beta-blockers—Present Status and Future Prospects. Edited by W. SCHWEIZER. University Park Press, Chamber of Commerce Building, Baltimore, MD 21202, 1974. 325 pp. 17.5 × 24.5 cm. Price \$19.50.

This publication contains the proceedings of an International Symposium held May 27–29, 1974. The book starts out with introductory remarks by Dr. C. Bartorelli describing the various points to be considered when evaluating beta-adrenergic blocking agents as potential antihypertensive drugs. The following chapter describes in great detail the relative beta-adrenergic blocking activity of various beta-blockers and their advantages and disadvantages when used as antihypertensive agents. Various possible mechanisms of action for the antihypertensive property of beta-blockers are also discussed.

The remaining chapters deal with various aspects of beta-blockers when prescribed as antihypertensive agents. All of these chapters are concise and well written, and certain aspects such as the renin-angiotensin-aldosterone interaction and the effect of beta-blockers on this system are covered rather thoroughly. In addition, there are chapters dealing with the importance of plasma volume in the treatment of hypertension and clinical experience with beta-blockers in the treatment of hypertension in the United Kingdom. Most of the chapters are followed by discussion sections which are very stimulating. Finally, the use of beta-blockers as antihypertensives is covered in a general discussion session, which is interesting, thought-provoking, and invaluable to the practicing physician as well as various research investigators.

Another aspect of beta-blockers covered in this book deals with their use in ischemic heart diseases, angina pectoris, cardiac arrhythmias, and hypertrophic cardiomyopathy. All of these chapters are written very thoroughly. The book also contains separate chapters that cover such topics as cardiological aspects of beta-blockade in

stress situations and oxygen dissociation from hemoglobin. Finally, the last portion of the book is devoted to describing the metabolic effects of beta-blockers as well as their pharmacokinetic properties, followed by a general discussion session on guidelines for the use of beta-blockers in general practice.

This book can serve as an excellent reference source for clinicians, research investigators, graduate students, and clinical pharmacists. Considering the wealth of information contained in this volume, the price is very reasonable.

*Reviewed by Mustafa F. Lokhandwala
Department of Pharmacology
College of Pharmacy
University of Houston
Houston, TX 77004*

The Alkaloids. Vol. 5. Edited by J. E. SAXTON. The Chemical Society, Burlington House, London, England, W1V 0BN, 1975. 303 pp. 14 × 22 cm. Price \$48.25.

This book, the fifth of a series on alkaloids, is divided into 16 chapters and covers the literature from July 1973 to June 1974. As is the custom with previous books in this series, the first chapter is concerned with the biosynthesis of various classes of alkaloids and constitutes approximately 20% of the total book volume. This chapter begins with a quick, light introductory review of alkaloid biosynthesis, followed by detailed discussions on newer findings.

Chapters 2–16 are concerned with the phytochemistry of the alkaloids of pyrrolidine, piperidine, and pyridine; tropane; pyrrolizidine; indolizidine; quinolizidine; quinoline, quinazoline, acridone, and related compounds; β -phenylethylamines and isoquinoline; Amaryllidaceae and related plants; *Erythrina* and related plants; indole; diterpenoid; and steroidal and miscellaneous alkaloids. As is the case in past books of this series, the chapters on indole and isoquinoline alkaloids are more extensive than the discussions of other groups of compounds simply because of the abundance of literature on the chemistry of these two groups of alkaloids.

Of particular interest to students of indole alkaloids is J. A. Joule's compilation of ^{13}C -NMR data in a table of 36 typical indole and two biogenetically related quinoline alkaloid structures. These data should be of invaluable aid in the identification and structure elucidation of similar indole alkaloids.

Other than the relatively high price, one can recommend this book unequivocally to students of natural products chemistry.

*Reviewed by Harry H. S. Fong
Department of Pharmacognosy
College of Pharmacy
University of Illinois at the
Medical Center
Chicago, IL 60612*

Symposium on Clinical Pharmacology. Sponsored by the National Cancer Institute. Pergamon Press, Maxwell House, Fairview Park, Elmsford, NY 10523. 236 pp. 16 × 23 cm. Price \$20.00.

This book is a collection of the papers presented at the Symposium on Clinical Pharmacology sponsored by the National Cancer Institute in the spring of 1973. Its purpose was to present and collate the most recent advances in the field of cancer chemotherapy. The papers are divided into five broad areas: Pharmacological Factors in Drug Action, Factors Influencing Drug Selectivity, Mechanisms of Clinical Drug Resistance, Combination Chemotherapy, and New Information on Mechanisms of Drug Action. This book should be of value to those involved in development of potential therapies for cancer.

Staff Review